

Hydrilla Invades the Midwest

Doug Keller

Indiana Implements Aggressive Eradication Plan

During a routine plant survey in August 2006, Indiana DNR fisheries biologists discovered a plant that appeared to be hydrilla in Lake Manitou, a 735-acre natural lake in northern Indiana near the town of Rochester. The plant was confirmed as hydrilla by Dr. Robin Scribailo from Purdue North-Central.

The Lake Manitou hydrilla population is far removed from other known populations (Figure 1). The nearest confirmed populations are in Pennsylvania and Tennessee. There are no other reported hydrilla populations in the Midwest.

Following the initial discovery and confirmation as hydrilla, more intensive plant sampling took place to determine the extent of the infestation. Scattered hydrilla plants have been found in the shallow waters of the northern half of the lake. There are a few areas where the hydrilla is very dense, almost to the point of monoculture. The wide distribution of the plants indicates that this species has probably been established in Lake Manitou for a few years.

It is suspected that the plant was introduced by a boat transporting aquatic vegetation. The densest beds of hydrilla are near a public boat ramp and to the east of that ramp (prevailing easterly wind direction).

Hydrilla is commonly termed "The World's Worst Weed." Hydrilla is a very fast-growing plant that, under ideal conditions, can grow an inch a day. The plant can grow at one percent (1%) of natural sunlight, a much lower light level

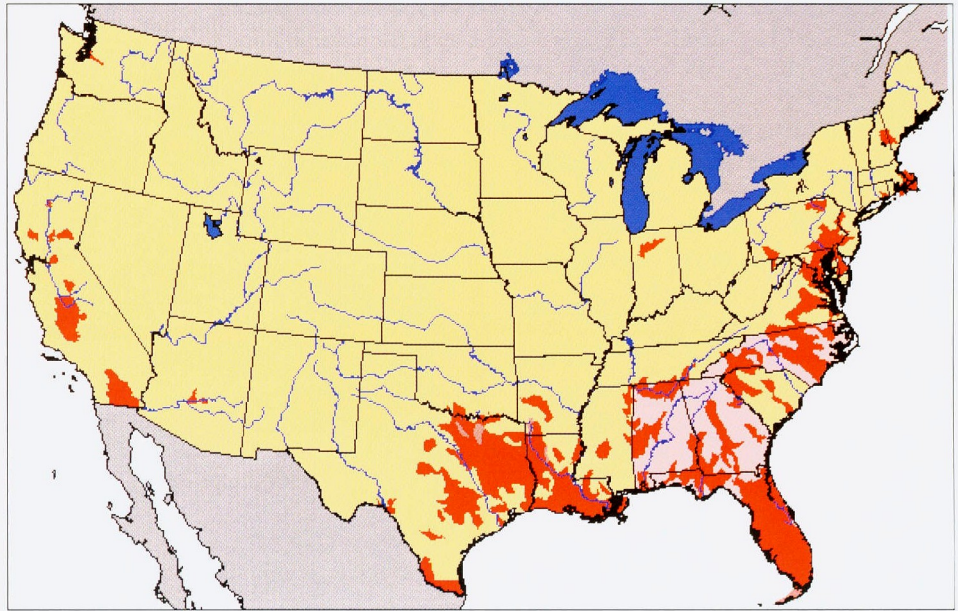


Figure 1. Distribution of hydrilla in the United States by watershed, courtesy of the U.S. Geological Survey.

than other aquatic plants. This means that it can grow in deeper and more turbid water than other vegetation. Reproduction is by four means: seeds, turions (hardy, overwintering buds), tubers (modified lateral roots), and fragmentation. Tubers and fragmentation are the most important means of reproduction. Fragmentation allows for long-distance dispersal of the plant by water flow, movement on recreational equipment, or other means. Tubers form on the roots of hydrilla. Tubers can lie dormant in the sediment for a few years before sprouting a new plant.

Tubers were well-developed on the roots and very abundant in August 2006 sampling (see Figure 2). This is an indication that the population is monoecious hydrilla since it produces tubers during long day conditions. Dr. Michael Netherland, U.S. Army Corps of Engineers, and Dr. John Madsen,

Mississippi State University, both determined that monoecious hydrilla is the form found in Lake Manitou (Figure 3). The monoecious form is usually found in the northern climates of the U.S.

Indiana is no stranger to invasive aquatic plants. Eurasian watermilfoil, curlyleaf pondweed, purple loosestrife, and phragmites are well-established throughout much of the state. Unwilling to let another exotic plant overtake our waters, containment and rapid response actions began immediately after the hydrilla discovery.

Hydrilla Containment

Actions in 2006 focused on containment of hydrilla in Lake Manitou and early detection efforts at other waters. Contact herbicide was applied to 20 acres of the densest hydrilla beds. This strategy was aimed at preventing further tuber



Figure 2. Monoecious hydrilla tubers can lie dormant in the sediment for a number of years before germinating and forming a new plant.

or turion production and to reduce the amount of fragmentation spread in the lake.

A quarantine was quickly established on Lake Manitou to prevent the spread of hydrilla to other waters. All access ramps, public and private, have been cabled and locked. The only boats or other watercraft allowed on the lake are those with owned or rented pier space on Manitou. The Lake Manitou Association will facilitate the launching of watercraft by residents in the spring and their removal in the fall. All watercraft, lifts, piers, and other equipment being removed will be thoroughly inspected and all plant material and sediment removed.

It is unknown at this time how long the access restrictions will remain on Lake Manitou. Due to the great threat hydrilla poses to other waters in the state and region, Indiana will be very cautious about lifting the restrictions until the threat of movement of plant material appears unlikely.

With what appeared to be a hydrilla population established for a few years, it is feared that the plant may have been transported to other waters. Surveys were immediately initiated at lakes with public access sites near Lake Manitou. Approximately two dozen lakes were surveyed in 2006 as part of this early detection effort. Hydrilla has not been discovered elsewhere.

Eradication is the Goal

Hydrilla eradication began in the spring of 2007. SePRO Corporation is the contractor for the eradication project. A whole-lake fluridone (trade name: Sonar)

application is the strategy being employed in 2007. A low dose of fluridone can be extremely effective to eliminate hydrilla. Due to the extended hydrilla tuber germination period, the maintenance of a lethal dose of fluridone may be necessary for

nearly the entire growing season. The goal is to eliminate hydrilla vegetative material to prevent any additional tuber formation.

Surveys are vital in determining how the eradication is progressing. Sampling of the tuber population was initiated in the spring of 2007 to document pre-eradication tuber densities. Tuber sampling will be conducted regularly to monitor the decline of the tuber bank. Vegetation surveys will also be conducted to closely monitor the effects of fluridone on the hydrilla.


Whole-lake fluridone treatments are expected to take place for three consecutive years at Lake Manitou which is the length of time experts studying monoecious hydrilla say that tubers can typically remain dormant. Beyond that,

additional monitoring will be required and targeted treatment may be necessary to achieve the goal of complete elimination.

A project of this magnitude is expected to cost \$500,000 in 2007. Complete eradication may take between four and six years with a total price tag that could easily exceed \$2 million.

With the large expense of initiating whole-lake treatments when populations become well-established, early detection of new populations is ever so critical. Indiana will continue to expand its search for hydrilla at other waters in 2007.

An abundance of water is at risk in Indiana and the region should this plant escape and spread. Indiana's aggressive approach and willingness to mount such an expensive project shows the seriousness of this issue.

Doug Keller is an 18-year veteran with the Indiana Department of Natural Resources, Division of Fish and Wildlife. Doug has been the aquatic invasive species coordinator since the inception of the program in January 2005. You may reach Doug at DKeller@dnr.IN.gov. 

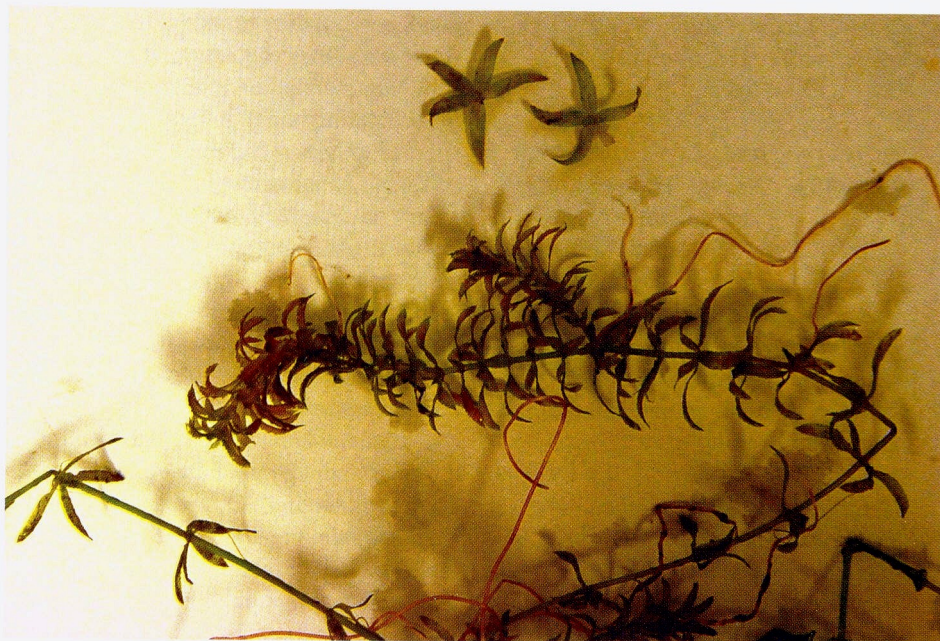


Figure 3. Monoecious hydrilla from Lake Manitou.